



ELECTRICAL

General Information

The Sacramento Municipal Utility District (SMUD) provides electrical service to customers located within the Downtown Infrastructure Study area. Power is transmitted to the Downtown Infrastructure Study area by a series of underground 115 kilovolt (kV) transmission lines that feed underground 12 kV distribution and underground/overhead 21 kV systems. An underground 115 kV loop connects SMUD Station A located at 6th and H Streets, Station B located at 19th and O Streets, and Station D located at 8th and R Streets. This loop is also connected to the North City (north of 20th & C Streets) and Mid City (35th & R Streets) substations.

Station D, Mid City and the North City substations drop the 115 kV to 21 kV and Station A and Station B transform 115 kV to 12 kV to serve the overall downtown area. The 12 kV system is a high reliability network with redundant feeds, intended to serve the high-rise core area where considerations such as keeping elevators and newspaper presses operating are important. The 21 kV system serves the balance of the downtown area and will likely be used to serve new development within the greater downtown area and outside of the downtown core.

Existing Conditions (Facilities)

As stated above, the 115 kV transmission system is connected to Station A located on the north side of H Street between 6th and 7th Streets just outside the Study area. The transmission lines are located in H Street from the Substation to 5th Street and then in 5th Street south through the Study area.

The southerly portion of downtown Sacramento is served by the 21 kV distribution system. This system is fed by Station D and by Mid City. Station D has two 40 Million Volt Amperes (MVA) transformer banks. Mid City has two 37.5 MVA and two 21 MVA banks. The 21 MVA banks could be changed out to 37.5 MVA banks if it became necessary to serve the demands of the area.

The 12 kV network has limited capacity for expansion. It is served by Station A which has six banks (ranging 20-25 MVA) and Station B which contains three 37.5 MVA transformer banks and have no further room for additional transformer banks. The 115 kV circuits utilize pressurized oil-filled cables with pumps that circulate oil through the cables. Repairs or relocations are difficult and expensive, and require importing technicians from out of state where this older technology is more common. Connections are expensive for customers, requiring large underground vaults and redundant transformers and feeds, with fire suppression and dewatering facilities.

Regulatory Context

The energy consumption of new buildings in California is regulated by State Building Energy Efficiency Standards, Title 24. These are contained in the California Code of Regulations, Title 24, Part 2, Chapter 2-53. Enforcement of the regulations is addressed in the California Code of Regulations, Title 20, Chapter 2, Subchapter 4, Article 1. Title 24 applies to all new construction of both residential and non-residential buildings, and regulates energy consumed for heating, cooling, ventilation, water heating, and lighting.

Proposed Improvements

Based on land use projections given in this Downtown Infrastructure Study, SMUD estimates that the additional electrical load from development may be 30 to 35 megawatts, and is not likely to exceed 40 megawatts. This load can be fed by the existing transmission and distribution system without adding major components in the Downtown Infrastructure Study Area. However, additional major equipment and infrastructure external to the Study Area will be required as electrical demand approaches area electrical capacity. This would require additional duct banks and splice vaults along 5th and 6th Streets. There is also a possibility of extending a feeder tie on 7th or 12th Streets from the north but this may be external to the Study Area. These improvements will be identified in SMUD's five year system plan as the need arises.



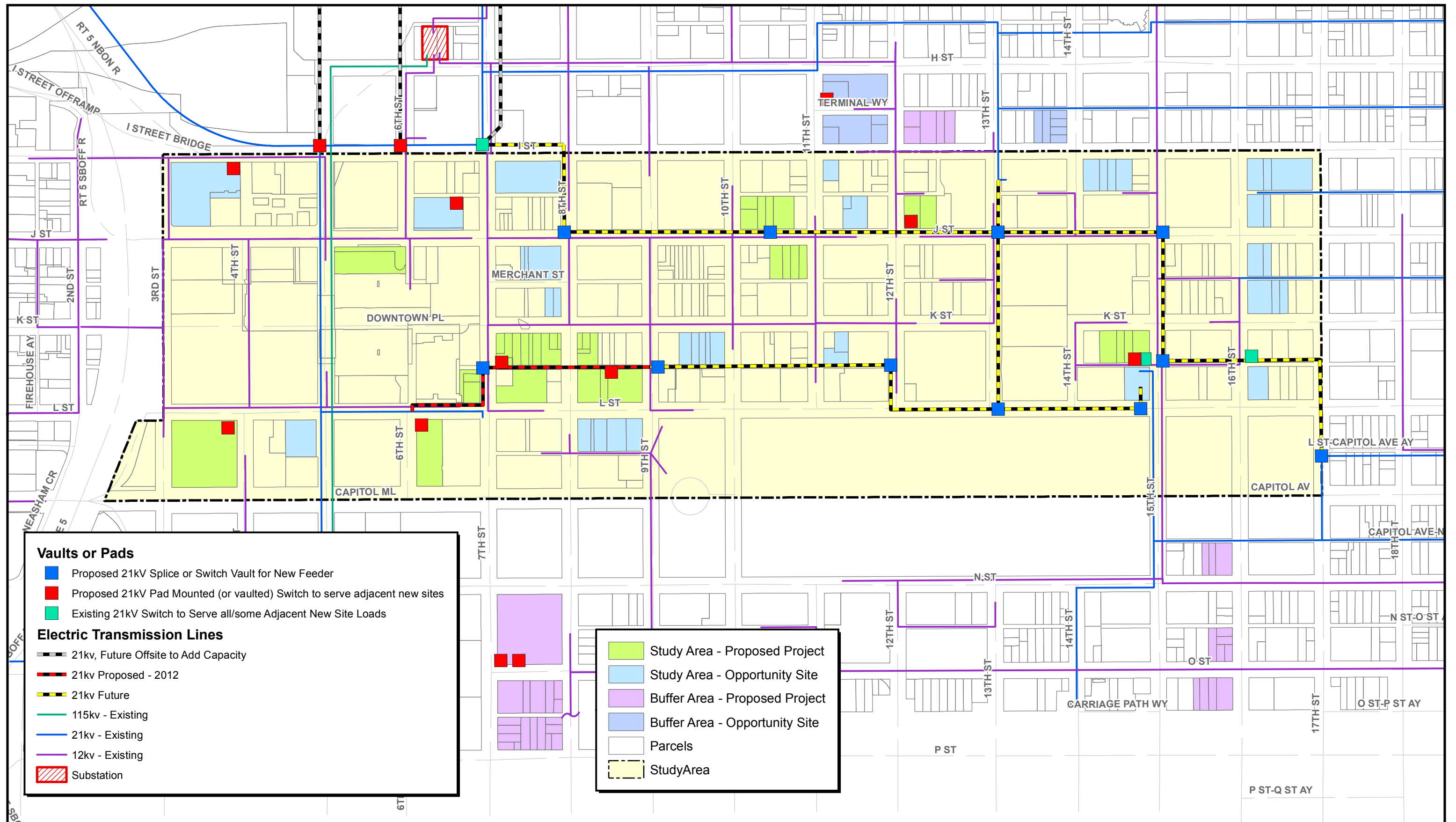
Extension of the existing 21 kV distribution system will be required to serve the Proposed Projects and Opportunity Sites.

In the near term, SMUD anticipates extending the existing 21kV system from the intersection of 6th & L Streets east on L to 7th, north on 7th to the K/L Alleyway, then east in the Alleyway to 9th Street. This extension of the system is proposed for construction in 2012. The future extensions of the 21kV are anticipated mainly along J Street from 8th to 15th, 13th Street from just north of the I/J Alleyway to the L Street, the K/L Alleyway from 9th to 12th and from 15th to 17th, and L Street from 12th to 15th Street. The proposed system extensions are depicted in Figure VII-1.

The future 21 kV routes and switchgear locations are subject to change based on the sequence that sites develop, specific load requirements, other utility conflicts, availability of required space for splicing manholes, duct banks, etc. These routes would provide the 21 kV feeder system to within two blocks of the identified Proposed Projects and Opportunity Sites. Additional infrastructure (switchgear, conduit, pull boxes, etc.) to serve these sites will need to be determined with SMUD and the individual site developers

In accordance with SMUD's Rules and Regulations, offsite infrastructure for the 21kV extension will be provided by SMUD. All onsite infrastructure will be provided by the site owner/developer. This is applicable when receiving service from SMUD's preferred source.

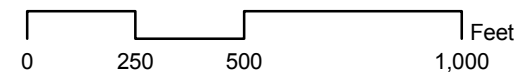
The project developer will be required to install service to the proposed project. The proposed development site plan will need to incorporate adequate space (including working clearances) for the placement of above ground pad mounted switches and transformers. If room is not available on the project site or immediately adjacent to the project site, more expensive underground vaults within the street section or building setback will be required. These vaults are very large (typically 9' x 20'), and costly to install. The costs of the transformer and installation are paid by the project developer. To eliminate the challenge and expense of installing the underground vaults, developers are encouraged to plan adequate space for pad mounted switches and transformers when developing the project site plan.



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Downtown Infrastructure Study - Electrical Plan

Figure VII-1



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